

What is claimed is:

1. An agglomeration for iron and steel production, consisting essentially of:  
a sulfur-containing material;  
an oxide-containing material; and  
a mechanical binder.
2. The agglomeration of claim 1, wherein the mechanical binder includes a metal powder.
3. The agglomeration of claim 1, wherein the mechanical binder includes one or more metal powders selected from the group consisting of iron powder, aluminum powder, and copper powder.
4. The agglomeration of claim 1, wherein the mechanical binder includes both iron powder and aluminum powder.
5. The agglomeration of claim 4, wherein the agglomeration includes at least about 15% by weight sulfur, at least about 4% by weight oxygen, and at least about 1% by weight aluminum, the balance being iron and incidental impurities.
6. The agglomeration of claim 5, wherein the agglomeration includes no more than about 30% by weight sulfur, no more than about 10% by weight oxygen, and no more than about 34% weight aluminum.
7. The agglomeration of claim 1, wherein sulfur-containing material includes a sulfur-metal compound.
8. The agglomeration of claim 1, wherein the sulfur-containing material includes iron sulfide.

9. An additive for iron and steel production, consisting essentially of:  
a sulfur-metal compound;  
iron oxide; and  
a metal powder.

10. The material of claim 9, wherein the material is in the form of an agglomeration.

11. The material of claim 9, wherein the material includes iron sulfide.

12. The material of claim 11, wherein the metal powder includes iron powder.

13. The material of claim 12, wherein the metal powder includes aluminum powder.

14. The material of claim 13, wherein the material is in the form of a granular powder.

15. An additive for iron and steel production, comprising:  
a metal-sulfur compound;  
a metal oxide; and  
a metal powder.

16. The additive of claim 15, wherein the metal-sulfur compound includes iron sulfide.

17. The additive of claim 15, wherein the metal powder includes one or more metal powders selected from the group consisting of iron powder, aluminum powder, and copper powder.

18. The additive of claim 15, wherein the metal powder binder includes iron powder.

19. The additive of claim 18, wherein the metal powder binder also includes aluminum powder.

20. The additive of claim 19, wherein the metal-sulfur compound includes iron sulfide.

21. The additive of claim 20, wherein the metal oxide includes iron oxide.

22. The additive of claim 15, wherein the additive is in the form of a powder.

23. The additive of claim 15, wherein the additive is in the form of an agglomeration.

24. A method of re-sulfurizing iron, comprising:

forming a molten base iron; and

adding an additive to the base iron;

wherein the additive includes:

a metal-sulfur compound;

a metal oxide; and

a metal powder.

25. The method of claim 24, wherein the additive is in the form of an agglomeration.

26. The method of claim 24, wherein the additive is in the form of a powder.

27. The method of claim 24, further comprising adding an inoculant to the iron.

28. The method of claim 27, wherein the adding the additive and the adding the inoculant occur substantially simultaneously.

29. The method of claim 27, wherein the weight of the additive added is from about 10 to 40% of the total weight of the inoculant and the additive.